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Quality Of Health Care In Maternal Period

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1 Abstrak.

Studi ini merupakan analisis lanjut yang memanfaatkan data Survei kesehatan Rumah Tangga (SKRT 1995) yang berkaitan dengan data kesakitan dan kematian ibu (maternal). Kualitas pelayanan kesehatan selama kehamilan, persalinan dan pasca melahirkan diukur dengan memakai indikator proxy yang dapat diperoleh dari data SKRT 1995. Kerangka pikir analisis menuju pada kerangka konsep yang dikembangkan oleh Mc Carthy dan Maine, sedangkan analisis statistik yang diterapkan dalam analisis dua variabel dan multiple logistik regression.

Dari studi ini nampak bahwa kualitas pelayanan semasa kehamilan perlu ditingkatkan baik di Jawa maupun diluar Jawa, mengingat masih lebarnya kesenjangan antara K1 dan K4 (antara 78,5 % dan 48,6 %) pada lima tahun terakhir. Disamping itu proporsi ibu melahirkan yang ditolong oleh tenaga kesehatan relatif masih rendah, yaitu 28,2 % di Jawa dan 24,1 % di luar Jawa. Sedangkan proporsi ibu dan bayi yang periksa untuk pasca persalinan di tenaga kesehatan juga masih relatif rendah (kurang dari seperempat). Faktor-faktor yang berpengaruh pada pelayanan semasa kehamilan, persalinan dan pasca persalinan adalah tingkat pendidikan dan lokasi tempat tinggal ibu. Ibu dengan tingkat pendidikan lebih tinggi dan berdomisili diperkotaan lebih cenderung memilih tenaga penolong yang lebih profesional.

1. Introduction

1.1 Background

Although it is still in debate about the level of maternal mortality ratio (MMRatio) in Indonesia, it is believed that MMRatio is high. Some publications give varied estimates the MMRatio for Indonesia may be within the range 450 to 650 per 100.000 (Unicef, 1955; Stanton, 1995; WHO/Unicef 1996).

The High maternal mortality ratio is usually related with the low usage of health professional in assisting delivery. It was reported that only about 50% of all deliveries in Indonesia was attended by health personnel (Depkes, 1996). High proportion of mothers are still in favor to traditional birth attendants (TBA) for their antenatal, natal and post natal cares. These choice may be related to low socio-economic status of the mothers.

A high quality of cares in maternal period will secure three out of four pillars of the safe-motherhood (except family planning). High quality of cares in antenatal, delivery and purpureum period will be one of the key success to reduce maternal mortality. Therefore, health care perfomance should not be evaluated based on coverage of services only, but also on the quality of care. This analysis tends to evaluate the quality of health care in maternal period based on the available data of SKRT 1995.

1.2 Objectives:

The general objective is to study seeking care pattern and quality of health cares of antenatal, natal and postnatal. The specific objectives are :

1. To contrast seeking care pattern on antenatal, natal and postnatal in Java and Outer Java provinces.
2. To evaluate proxy indicators of quality cares of antenatal, natal and postnatal based on available data.
3. To study the related factors of quality of health care indicators of antenatal, natal and postnatal.

1.3 Methodology

1. The study will use secondary data of SKRT

1995: Maternal Morbidity and Mortality Study.

2. The quality of cares are defined using proxy indicators. The proxy indicators are developed based on available data of SKRT 1995: Maternal Morbidity and Mortality Study.
3. Conceptual framework of Mc Carthy and Maine will be referred as framework of analysis.
4. Descriptive statistics, bivariate analysis, and multiple logistic regression are applied for this study.

1.4 Limitation of the study

1. Quality of cares are not directly measured, and proxy indicators are only based on available data of SKRT 1995.
2. Some inferences of the relationship are based on limited cases (due to missing cases), therefore they should be interpreted with caution.

2 Conceptual Framework

Modified conceptual framework of McCarthy and Maine (1992) is adapted for the analysis of relationship between quality of care and related variables (see figure 1). Quality of maternal health care is treated as depandent variable, while the independent variables include mass media, mother's characteristics, knowledge and behavior of mothers on the their health, mother's health condition, and access to health service.

3 Result

3.1 Quality of ante natal care

3.1.1 Quality of care of current pregnancy

Out of 7824 mothers, 5.3% were currently pregnant. These 416 mothers majority resided in West Java (28.6%) and Central Java (23.6%), and the remainders resisded in Maluku (20.2%), East Nusa Tenggara (14.7%), and Irian Jaya (13.0%). For the purpose of analysis these five provinces are classified into two groups of Java and Outer Java provinces. Proxy indicators of quality of care include four components type of care provider, type of services ("5T" services), frequency of visits ("K4" visits) and place of care (see Figure 1 and table 1).

Mothers in Java provinces tended to choose health personnel for their antenatal care than mothers in Outer Java provinces,

nevertheless the frequency of antenatal care was not different between the regions. Three quarter of mothers with ANC in Java took public health center and clinic at place of antenatal care, while these types of facility were used by half mothers in Outer Java provinces. Antenatal care that met "5T" services (body weighing, blood pressure examination, fundus of uteri palpation, ferrous supplement, and tetanus toxoid immunization) was served more to mothers in Java than to mothers in Outer Java (table 1).

Figure 1 : Conceptual Framework of analysis

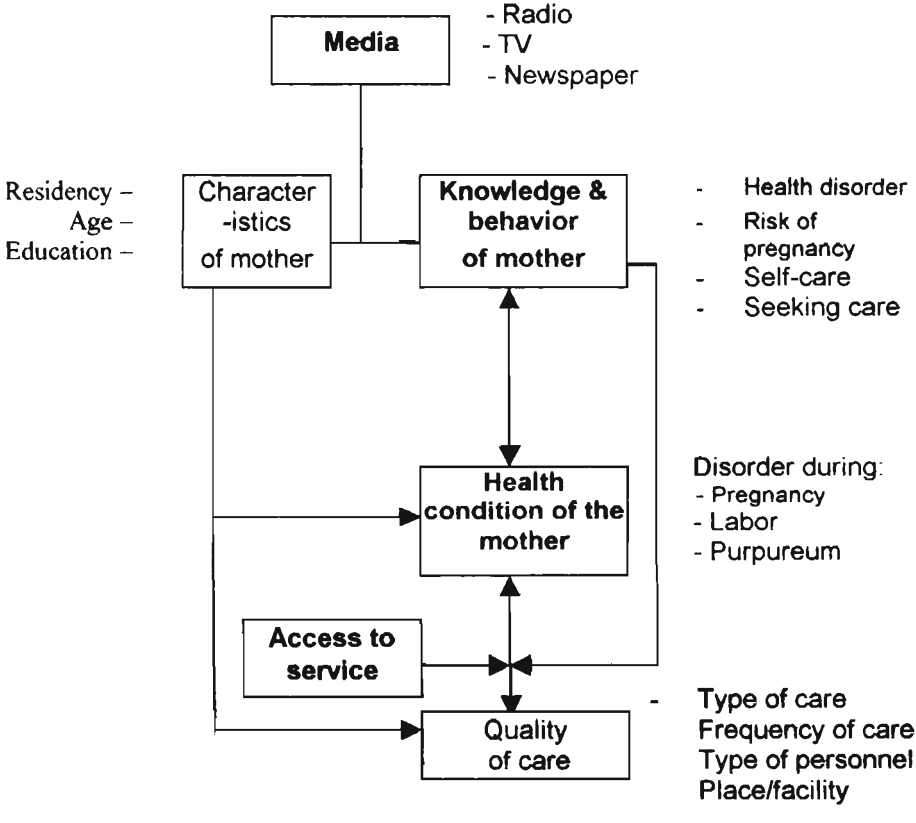

Table 1.
Proxy Indicator of Ante Natal Care (ANC) Quality of Current Pregnancy by Region

Proxy Indicator of ANC Quality	Java		Outer Java		X^2 Test
	N	(%)	N	(%)	
1. Pregnancy examiner :					
- Never ANC	18	9.4	55	31.3	X^2 = 30.3149
- Non health personnel	16	8.3	5	2.8	df = 2
- Health personnel	158	82.3	116	65.9	p = 0.00000
2. Frequency of ANC : *)					X^2 = 1.12
- Didn't follow pattren 1-1-2	89	56.3	73	62.9	df = 1
- Follow pattren 1-1-2	69	43.7	43	37.1	p = 0.272056
3. Place of ANC : *)					
- Polindes, Posyandu, other	35	22.2	37	31.9	X^2 = 14.28
- Puskesmas, Private clinic	114	72.2	60	51.7	df = 2
- Midwife practitioner, Private hospital, Medical Practitioner	9	5.6	19	12.0	p = 0.00079
4. ANC with 5T : *)					
- Less than 5T	64	40.5	52	44.8	X^2 = 7.70
- Follow 5T	72	45.6	36	31.0	df = 2
- More than 5T	22	13.9	28	24.1	p = 0.021232

Note : *) = Only for those pregnancies examined by health personnel

3.1.2 Quality of care of pregnancies in the past five years

Contrasting quality of care of pregnancies in the past five years in the two regions, mothers in Java chose more health personnel and followed K4 visits than those mothers in outer Java Public health center, private clinic and midwifery practitioner were common places of antenatal care both in Java and outer Java. Private hospital and medical practitioner were relatively used more frequently in outer Java. Percentage of mothers that received antenatal care that met 5T services was almost similar in the two regions (table 2).

Table 2.
Proxy Indicator of Ante Natal Care (ANC) Quality
of Pregnancy Occurred in the last 5 years by Region

Proxy Indicator of ANC Quality	Java		Outer Java		X^2 Test
	N	(%)	N	(%)	
1. ANC provider:					
- Never ANC	139	6.8	552	26.4	X^2 = 288.911
- Non health personnel	303	14.7	239	11.4	df = 2
- Health personnel	1615	78.5	1297	62.1	p = 0.00000
2. Frequency of ANC : *)					
- Less than 4x	465	32.2	468	43.1	X^2 = 64.479
- Didn't follow 1-1-2 (≥4)	278	19.2	262	24.1	df = 2
- Follow 1-1-2 (≥4)	702	48.6	355	32.7	p = 0.000007
- Don't know	(170)		(212)		
3. Place of ANC : *)					
- Polindes, Posyandu, other	237	14.7	311	24.0	X^2 = 109.475
- Puskesmas, Private clinic	1296	80.4	824	63 7	df = 2
- Midwife practitioner, Private hospital, Medical Practitioner	78	4.8	159	12.3	p = 0.00000
- Don't know	(4)		(3)		
4. ANC with 5T : *)					
- No 5T	1	0.1	6	0.6	X^2 = 8.66725
- Less than 5T	625	44.8	412	41.0	df = 2
- 5T	769	55.1	588	58.4	p = 0.01312
- Don't know	(220)		(291)		

Note : *) = Only those pregnancies examined by health personnel

3.1.3 Factors related with quality of antenatal care

Based on bivariate analysis and indicated by chi-square statistics, variables identified in the model (figure 1) that have relationship with quality of care (represented by type, frequency and place of care and type of personnel) are all variables of mother characteristics, variables of knowledge and behavior of self

care and reasons for antenatal care, but not variables of knowledge on pregnancy disorder and risk factors.

Dichotomizing dependent variables was done to employ multiple logistic regression. Type of care provider was classified as health and not health personnel place of antenatal care was divided into modern and non-modern facility, type of services was classified into services which meet and do not meet "5T" categories, and frequency of services was classified into frequency that meet or does not meet "K4" requirement.

Various odds ratios resulted from the multiple logistic regression analysis range from 0,1 to 2,3 (Table 3). Education of mother, contact with mass media, self care, and reason to do antenatal care, have significant relationship with all of the proxy indicators of quality of antenatal care. Residence and age of the mother have association with type of personnel and type of facility of antenatal care, and knowledge of mother on pregnancy has relationship with K4 visits and 5T services.

3.2 Quality of care for abortion or labor

3.2.1 Quality of care for abortion and labor in the the last five years

Quality of care for abortion and delivery was representated by type of personnel who provides care and type of facility. Type of personnel used by the mothers for abortion care was quite different between Java and Outer Java provinces. Health personnel was used by 51% of mothers in Java but this personnel was only used by 30% of mothers in Outer Java. For natal care (labor) health personnel was used at low level both in Java (28,2%) and Outer Java (24,1%). Health facility as the place of labor was very low utilized in two region, in Java only by 13,1% of mothers and in outer Java by 15,4% (Table 4).

3.2.2 Some variable related to quality of care for abortion and labor.

Based on bivariate analysis, type of personnel serve care for abortion was associated with residence, education of mother, and knowledge on self care and reason for seeking antenatal care. These variables

also have association with type of personnel and place/facility used for labor. In addition, age of mothers, contact with mass media, and knowledge of pregnancy disorder are variables which also have association with quality of natal care.

Due to the small cases of abortion, only variables of residence, education of mothers, contact with mass media, and knowledge on pregnancy disorder that have relationship with quality of care in multiple logistic regression. These variables and in addition, variables of knowledge of mother on pregnancy disorder, self-care, and reason to do antenatal care have association with quality of natal care. The analysis also that mothers who had experienced pregnancy disorder tended to use non-health personnel for their delivery (Table5).

Table 3.

Result of Multiple Logistic Regression with the Quality of Care as dependent variable, in Pregnancy Occurred in The Last Five Years

Independent Variables	Health prov		Puskesmas		K4		5T	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Residence								
- Rural	1		1		1		1	0.9-1.2
- Urban	1.5	1.2-1.7*	2.3	1.8-3.0*	1.1	0.9-1.2	1.1	0.8-1.2
Mother's Age								
>= 36	1		1		1		1	
=< 19	0.9	0.7-1.2	0.7	0.5-1.0*	1.1	0.8-1.2	1.1	0.8-1.2
20 – 35	1.3	1.1-1.5*	1.2	1.0-1.5	1.2	1.0-1.4	1.2	1.0-1.4
Mother's Education								
- Secondary & plus	1		1		1		1	
- Elementary school	0.8	0.7-0.9*	0.8	0.7-1.0*	1.0	0.8-1.1	1.0	0.8-1.1
- Less than Elementary	0.6	0.5-0.7*	0.8	0.7-1.0*	0.7	0.6-0.8*	0.7	0.6-0.8
Contact with Media								
- None	1		1		1		1	
- 1 type	0.6	0.5-0.7*	0.8	0.6-1.0*	0.7	0.6-0.9*	0.7	0.6-0.9*
- 2 types	1	0.8-1.2	0.8	0.7-1.0*	0.8	0.7-1.0*	0.8	0.7-1.0*
- 3 types	1.3	1.1-1.5*	1.0	0.8-1.2	1.2	1.1-1.4*	1.2	1.1-1.4*
Knowledge on pregnancy disorder								
- Don't know	1		1		1		1	
- Low	1	0.7-1.4	1	0.8-1.3	1	0.8-1.2	1	0.8-1.2
- High	0.9	0.7-1.1	0.9	0.8-1.1	0.8	0.7-0.9*	0.8	0.7-0.9*
Knowledge on the Risk Factors								
- Don't know	1		1		1		1	
- Low	1	0.7-1.5	1.1	0.9-1.3	1.1	0.9-1.4	1.1	0.9-1.4
- High	0.9	0.7-1.2	1	0.8-1.2	1.1	0.9-1.3	1.1	0.9-1.3
Self Care								
- None	1		1		1		1	
- 1 type	0.1	0.0-0.1*	1	0.5-1.9	0.8	0.4-1.5	0.8	0.4-1.5
- 2 types	1.5	0.8-3.0	0.6	0.4-0.9*	0.6	0.4-0.9*	0.6	0.4-0.9*
- 3 types	1.5	1.0-2.3	0.9	0.7-1.2	0.8	0.6-1.1	0.8	0.6*1.1
- 4 types	1.7	1.2-2.5*	1	0.8-1.3	1.0	0.8-1.3	1.0	0.8-1.3
- 5 types	1.6	1.2-2.2*	1.1	0.9-1.4	1.3	1.1-1.6*	1.3	1.1-1.6*
Reason to ANC								
- Used to do	1		1		1		1	
- Recommended by other people	0.2	0.1-0.3*	0.4	0.3-0.7*	0.6	0.4-0.9*	0.6	0.4-0.9*
- Pregnancy disorder or reserve for delivery	1.9	1.0-3.6	1.7	1.0-2.8*	1.1	0.7-1.7*	1.1	0.7-1.7
Pregnancy Disorder								
- None	1		1		1		1	
- 1 type	0.9	0.7-1.3	0.9	0.7-1.1	1.2	1.0-1.4	1.2	1.0-1.4
- >= 2 types	1	0.7-1.4	1.1	0.8-1.5	1.2	0.9-1.5	1.2	0.9-1.5

Note : * p Wald =< 0.05

Table 4
Proxy Indicator of Quality of Care for Abortiona and Labors
Occurred in The Last Five Years, By Region

Proxy Indicator of	Java		Outer Java		X^2
	N	(%)	N	(%)	Test
1. Quality of Care for Abortion					X^2 = 5.46703
provided by :	25	49.0	49	70.0	df = 1
- Non health personnel	26	51.0	21	30.0	p = 0.01938
- Health personnel					
Quality of Natal Care					
a. Provider					X^2 = 8.55222
Non Health personnel	1403	71.8	1526	75.9	df = 1
Health personnel	551	28.2	485	24.1	p = 0.00345
b. Facility					
At Home	1657	86.9	1705	84.6	X^2 = 4.38763
Health Facility	249	13.1	306	15.4	df = 1
					p = 0.03620

Table 5.
Result of Multiple Logistic Regression with the Quality of Care for Abortion and Labor as dependent variable

Independent variables	Abortion Care Provided by Health Personnel		Delivery Assisted By Health Personnel		Delivery's place In Health Facility	
	OR	95%CI	OR	95%CI	OR	95%CI
Residence						
- Rural	1		1		1	
- Urban	2.8	1.0-7.4*	2.1	1.8-2.4*	2.2	1.9-2.5*
Mother's Age						
>= 36	1		1		1	
=< 19	0.005	-	1	0.7-1.4	0.9	0.6-1.4
20 – 35	37.8	-	1	0.9-1.3	1.0	0.8-1.2
Mother's Education						
- Secondary & plus	1		1		1	
- Elementary School	0.9	0.3-2.6*	0.65	0.6-0.7*	0.7	0.6-0.8*
- Less than Elementary	0.2	0.1-0.9*	0.6	0.5-0.7*	0.6	0.5-0.7*

Table 5 (continued).
Result of Multiple Logistic Regression with the Quality of Care for Abortion and Labor as dependent variable

Independent variables	Abortion Care Provided by Health Personnel		Delivery Assisted By Health Personnel		Delivery's place In Health Facili	
	OR	95%CI	OR	95%CI	OR	95%CI
Contact with Media						
- None	1		1		1	
- 1 type	7.8	1.4-	0.5	0.4-0.6*	0.7	0.5-0.9*
- 2 types	0.5	44.5*	0.9	0.8-1.1*	0.9	0.7-1.1
- 3 types	0.2	0.1-0.6* 0.1-0.9*	1.0	0.9-1.2	0.9	0.8-1.1
Knowledge on Disorder Of Pregnancy						
- Don't know	1		1		1	
- Low	0.08	-	1	0.8-1.3	1	0.8-1.3
- High	0.04	-	0.9	0.7-1.0*	0.8	0.7-1.0*
Knowledge on the Risk Factors						
- Don't Know	1		1		1	
- Low	1.1	0.7-1.5	1	0.8-1.2	1.1	0.9-1.6
- High	0.9	0.7-1.2	1	0.9-1.2	0.9	0.7-1.1
Self Care						
- None	1		1		1	
- 1 type	0.3		0.4	0.2-0.7*	0.7	0.3-1.1
- 2 types	0.9		0.8	0.5-1.3	0.7	0.3-1.3
- 3 types	0.9		0.9	0.7-1.2	0.8	0.6-1.2
- 4 types	1.5		1.1	0.8-1.4	0.8	0.5-1.1
- 5 types	0.5		1.4	1.1-1.7*	1.3	1.0-1.7
Reason to ANC						
- Used to do	1		1		1	
- Recommended by other people	0.1		0.6	0.4-1.0	0.5	0.3-0.9*
- Preg. Disorder, or reserve for delivery	93.1		1.0	0.6-1.6	1.3	0.7-2.4
Preganancy Disorder						
- None	1		1		1	
- 1 type	0.5	0.2-1.4	1.0	0.8-1.2	1.2	1.0-1.4
- >= 2 types	2.5	1.0-6.5*	1.1	0.9-1.4	1.2	0.9-1.5
Delivery disorder						
- None	-	-	1		1	
- Yes	-	-	0.8	0.7-0.8*	0.9	0.8-1.0

Note : * p Wald =< 0.05

3.3 Quality of care in postnatal period

3.3.1 Quality of care in postnatal period in the last five years.

Proxy indicator used to measure the quality of care in postnatal period was only the type of personnel, which was dichotomized into health personnel or not. It is shown that provision of care by health personnel was slighly higher in Java (24,6%) than in Outer Java (20,1%). The proportion of care by health personnel in Java was 24,6% and in Outer Java was 20,1%. The care by health personnel for new born, however, was not different in the two regions, 22,8% in Java and 23,7% in outer Java (table 6).

Table 6.
Proxy Indicator of Quality of Care for new born and mother in Postnatal period in The Last Five Years, By Region

Proxy Indicator of	Java		Outer Java		X^2 Test
	N	(%)	N	(%)	
1. Quality of Care for new born, provided by :					
- Non health personnel	1594	77.2	1599	76.3	X^2 = 0.47658 df = 1
- Health personnel	470	22.8	496	23.7	p = 0.48997
2. Quality of Care for mother, provided by :					
- Non - Health Personnel	1492	75.4	1611	79.9	X^2 = 11.9547 df = 1
- Health Personnel	488	24.6	405	20.1	p = 0.00055

3.3.2 Some variables related to the quality of postnatal care.

Table 7 summarizes the multiple logistic regression results, quality of care for new born and mother in the postnatal period were defined as dependent variable. Some independent variables include all available variables in the model (Figure 1). Some characteristics of mother that contributed the choice of health

personnel as care provider include residency and education. Contact with media had no pattern of relationship . with the choice. Knowledge of mother on preganancy disorder, risk factors, self cares or reasons for ANC also had no relationship with the choice. The choice of health personnel as care provider was much influenced by mother experiences on disorders during pregnancy, delivery or purpureum. Those mothers that experienced disorder during pregnancy, delivery or purpureum tended to choose non-health personnel for their postnatal care.

Table 7.
Result of Multiple Logistic Regression with the Quality of Care for new born and mother as dependent variable. In Postnatal Period

Independent variables	Postnatal Care Provided by Health Personnel for mother		New born Care Provided by Health Personnel	
	OR	95%CI	OR	95%CI
Residence : - Rural	1		1	
- Urban	1.3	1.1 – 1.4	1.1	1.0 – 1.3
Mother's Age : >= 36	1		1	
=< 19	0.8	0.6 – 1.1	0.8	0.6 – 1.1
20 – 35	1.1	0.9 – 1.3	1.1	0.9 – 1.3
Mother's Education				
- Secondary & plus	1		1	
- Elementary school	0.9	0.8 – 1.0	0.9	0.8 – 1.0
- Less than Elementary	0.7	0.6 – 0.8*	0.6	0.5 – 0.7*
Contact with Media				
- None	1		1	
- 1 type	0.8	0.5 – 0.7*	0.5	0.5 – 0.7*
- 2 types	0.9	0.8 – 1.1	1.0	0.8 – 1.1*
- 3 types	1.2	1.0 – 1.4*	1.1	1.0 – 1.3
Knowledge on pregnancy disorder				
- Don't know	1		1.0	
- Low	1	0.8 – 1.2	0.9	0.7 – 1.0
- High	0.9	0.8 – 1.1	0.9	0.8 – 1.1
Knowledge on the Risk Factors				
- Don't know	1		1	
- Low	0.9	0.8 – 1.1	1	0.8 – 1.2
- High	1.0	0.9 – 1.2	0.9	0.8 – 1.1

Table 7 (Continued).
Result of Multiple Logistic Regression with the Quality of Care for new born and mother as dependent variable. In Postnatal Period

Independent variables	Postnatal Care Provided by Health Personnel for mother		New born Care Provided by Health Personnel	
	OR	95%CI	OR	95%CI
Self Care				
- None	1		1	
- 1 type	0.6	0.4 – 1.1	0.4	0.2 – 0.6*
- 2 types	0.6	0.3 – 1.1	1.1	0.7 – 1.7
- 3 types	0.4	0.3 – 0.7*	0.9	0.7 – 1.2
- 4 types	1.0	0.8 – 1.3	0.9	0.7 – 1.2
- 5 types	2.0	1.6 – 2.5*	1.4	1.2 – 1.7*
Reason to ANC				
- Used to do	1		1	
- Recommended by other people	0.6	0.4 – 1.0	0.9	0.6 – 1.4
- Disorder, or reserve for delivery	1.2	0.7 – 1.9	1.0	0.6 – 1.6
Pregnancy Disorder				
- None	1		1	
- 1 type	0.8	0.6 – 1.0	0.8	0.7 – 1.0
- >= 2 types	1.2	0.9 – 1.5	1.2	1.0 – 1.5
Delivery Disorder				
- None	1		1	
- Yes	0.8	0.7 – 0.8*	0.8	0.7 – 0.9*
Postnatal Disorder				
- None	1		1	
- Yes	0.7	0.5 – 0.8*	0.8	0.6 – 0.9*

Note : * p Wald =< 0.05

4 Discussion

4.1 The quality of maternal health care.

Regarding the chosen proxy antenatal care indicators, due to the limitation of available variables, it is assumed that the quality can be measured in the dimension of the "technical competence" and "safety side". The first one is reflected by personnel, ferquency and type of services, while the later is represented by facility of services. Both dimensions are used fir evaluating antenatal care quality. But for abortion, natal, and postnatal only type of care provider (personnel) was used which likely limited the quality to "competency".

Mothers, who had antenatal care to health personnel for their last five years pregnancies and followed "K4" visits, were still very low in Java (48,6%) and in outer Java (32,7%). The higher percentage in Java than in outer Java was consistent with the higher percentage of mothers in Java that had ANC to health personnel (K1) 78,5% vs. K1 in outer Java 62,1%. Compared with ANC of current pregnancy, K1 became better. K1 for current pregnancy was 82,3% in Java and 65,9% in outer Java.

According to the type of essential antenatal services (5T), only 55,1% of mothers in Java and 58,4% of mothers in outer Java had received such services. For current pregnancy 59,5% of mothers in Java and 55,2% of mothers in outer Java had received 5T services. Looking at percentage of K4 visits and 5T services of current pregnancy and pregnancy in the last five years indicated that antenatal care achievement was still under target. The MOH's policy on the distribution of 54.120 village based midwives by Mid Sixth National Five-Year Plan, and target of 70% K4 should be achieved by 1995. These figures might be used by Ministry of Health to review and improve their quality of care including "supervision system" and existing standard operating procedures on antenatal services.

Health personnel were more likely to be used for abortion, natal and postnatal care in Java rather than in Outer Java. The modern facility of delivery was likely more access to mothers in Outer Java than in Java. However mothers in Java may be still access to safer care since they more access to health personnel.

In general, the quality of care in all maternal period in Java was better than in Outer Java. But due to the low coverage of deliveries assisted by health profession in the last five years (less than 30%), most mothers both in Java and Outer Java were still facing unsafe care. Percentage of deliveries attended by health personnel in this study is smaller than figures reported by 1995 National Social Economic Survey (NSES) or 1996 NSES which gave figures of 46,1% and 50,0% respectively. The differences may be due to different type of data collectors used, SKRT 1995 uses midwives while NSES used Mantis of their "partners". Since abortion reported by the mother could not be distinguished if it was "Abortus Provocatus" or not, information on percentage of mothers used health personnel for their abortion care gave idea on problem of abortion.

Very low percentages of mothers, either in Java or in Outer Java, access to health personnel for their postnatal care and newborn care should be considered for further improvement for postnatal program.

4.2 Some factors related to the quality of antenatal care

Mothers in urban area and those aged 20-35 years were likely more access to health personnel for their antenatal care. Since those mother aged 20-35 are more likely low risk groups, this means that better antenatal care are more access to low risk than high risk groups. Education of the mothers was also related to choice of health personnel of antenatal care. This was in line with relationship of the choice with knowledge of mother on self cares and their contact with mass media. Input for the program is to give more attention to high risk groups in the rural area. Development health education tool and choice of appropriate mass media should be considered.

4.3 Some factors related to the quality of care in abortion and delivery services

Choice of health personnel for abortion and delivery cares and choice of health facility for delivery were influenced by residency and education of the mothers. Mothers live in urban area were more likely access to better services and mothers with higher education tended to choose better services. These relationships are understandable, since health personnel and health facility are more ready in urban area than in rural area. Higher educated mothers had knowledge of risk and economic capability to obtain better services more than those low educated mothers.

4.4 Some factors related to the quality of postnatal care

Factors related to postnatal care, both for new born and mother cares, were not different with those affected antenatal or natal care. Mothers reside in urban area were more access to better postnatal care than mothers in rural area. Mothers with less than elementary education tended to obtain services from non-health personnel. Mothers experienced delivery and postnatal disorder tended to obtain postnatal care from non-health personnel. Percentage of mothers used health personnel for postnatal care was very low and must lower than percentages of health personnel used by mothers for their antenatal and natal cares. This suggest that postnatal care should be paid more attention by the program holder.

5 Conclusion and suggestion

5.1 Conclusions

1) Survey showed that the quality of antenatal care is needed to be improved, both in Java or in Outer Java with more attention to the latter, based on the following information :
   a) Wide gap between K1 and K4 visits. K1 visit achieved in Java was high for pregnancy in last five years (78,5%) but K4 visits was only 48,6%. Figures for Outer Java were 62,1% and 32,7% respectively. For current pregnancy K1 visit increased to 82,3% and K4 visit reached 43,7% for Java, and outer Java achieved K1 visits 65,9% and K4 visits 37,1%. K4 which indicates the fulfillment of required number of four antenatal visits was relatively low for both regions.
   b) Among mothers in Java who did antenatal care. 59,5% for current pregnancy and 55,1% for pregnancy in the last five years received 5T services. The corresponding figures for outer Java were 55,2% for current pregnancy and 58,4% for pregnancy in the last five years. All figures indicate the essential improvement of quality of care.
2) High percentage of mothers with abortion did not access to safe care indicated by the choice of health personnel for abortion care: 51% for mothers in Java and 30% for mothers in Outer Java.
3) High proportion of mothers still risked to unsafe care during their labors. Only 28,2% of deliveries in Java and 24,1% in Outer Java attended by health personnel. Deliveries that took place in health facilities were only 13,1% in Java and 15,4% in Outer Java.
4) Postnatal care both for mother and for newborn was poor. Less than one fourth of the mothers obtained their postnatal care to health personnel.
5) Factors related to maternal care: antenatal, natal and postnatal, were primarily education and residence of the mothers. Urban mothers were more access to qualified care and the educated mothers tended to obtain better care.
6) Some knowledge of the mother on maternal care likely gave positive seeking care. Experienced of delivery and postnatal disorder did not

necessarily mothers sought care to health personnel.

5.2 Suggestion

The result of analysis suggests that safe maternal cares including antenatal, natal and postnatal cares by mothers are poor and need improvement. Health education to popularize antenatal and postnatal cares or choice of safe natal care is needed. This will improve the knowledge of mother on maternal disorder and choices of safer care. New ideas and breakthroughs should be developed to interest mothers to use health personnel or health facility, probably to relate them with incentive and disincentive for mothers. Incentive or reward of obtaining birth certificate may be given to mother who want to use health personnel/health facility for both antenatal and natal care. Similarly, from provider side, capability to sell services (social marketing) and professionalism of health workers should be upgraded.

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